DECEMBER 1975

Virginia Wildlife

VOLUME XXXVI NUMBER 12

20 CENTS

Virginia Wildlife

Dedicated to the Conservation of Virginia's Wildlife and Related Natural Resources and to the Betterment of Outdoor Recreation in Virginia

Published by **VIRGINIA COMMISSION OF GAME AND INLAND FISHERIES,** ***Richmond, Virginia 23230***

COMMONWEALTH OF VIRGINIA

MILLS E. GODWIN, JR., Governor

Commission of Game and Inland Fisheries

COMMISSIONERS

DOLPH HAYS, *Chairman* . . . . . Arlington
RALPH L. WEAVER, *Vice Chairman* . . Waynesboro
JAMES D. BOWIE . . . . . Bristol
EDWARD E. EDGAR . . . . . Norfolk
FRANK F. EVEREST, JR. . . . . Alexandria
ALLAN A. HOFFMAN, M.D. . . . . Danville
JAMES R. KNIGHT, JR., D.D.S. . . . . Warsaw
JOHN P. RANDOLPH . . . . . Spring Grove
RICHARD E. WATKINS . . . . . Richmond
WILLIAM H. WEST . . . . . Millwood

ADMINISTRATIVE OFFICERS

CHESTER F. PHELPS, *Executive Director*
JAMES F. MCINTEER, JR., *Assistant Director*
RICHARD H. CROSS, JR. . . *Chief, Game Division*
HARRY L. GILLAM . . *Chief, Education Division*
JACK M. HOFFMAN . . . . *Chief, Fish Division*
JOHN H. MCLAUGHLIN, *Chief, Law Enforcement Div.*
SAM J. PUTT . . . *Chief, Administrative Services*

PUBLICATION OFFICE: Commission of Game and Inland Fisheries, 4010 W. Broad St., Richmond, Virginia

HARRY L. GILLAM . . . . . *Editor*
ANN E. PILCHER . . . . . *Editorial Assistant*
CARL C. KNUTH . . . *Artist and Photographer*
MEL WHITE . . . . . *Circulation*

DECEMBER

Volume XXXVI/No. 12

IN THIS ISSUE **PAGE**

Editorial: The Outdoor Mystique 3
Letters 3
A Turkey for Dad 4
Scenic River on the Shelf: The Staunton 6
How to Catch a Bass 8
Another Chance 9
Pumped Power: Potential or Problem? 10
Thunder on the Rappahannock 12
Conservationgram 13
Cooperation in Nature 14
Duck Hunting Glossary 16
Cooperative Wildlife Management in Northern Virginia 17
Go in the Back Way 19
Know Your Commissioners: Richard E. Watkins . .21
Make Your Own Hunting Map 22
Youth Afield 24
Bird of the Month: The Snow Bunting 25
The Drumming Log 26
Index to *Virginia Wildlife* 27

Observations, conclusions and opinions expressed in *Virginia Wildlife* are those of the authors and do not necessarily reflect those of the members or staff of the Commission of Game and Inland Fisheries.

COVER: Red-headed Woodpecker, by Roger T. Flythe, Abingdon, Virginia.

SUBSCRIPTIONS: One year, $2.00; three years, $5.00. Make check or money order payable to Treasurer of Virginia and send to Commission of Game and Inland Fisheries, P. O. Box 11104, Richmond, Virginia 23230.

VIRGINIA WILDLIFE is published monthly at Richmond, Virginia, by the Commission of Game and Inland Fisheries, 4010 W. Broad Street. All magazine subscriptions, change of address notices, and inquiries should be sent to Box 11104, Richmond, Va. 23230. The editorial office gratefully receives for publication news items, articles, photographs, and sketches of good quality which deal with Virginia's soils, water, forests, and wildlife. The Commission assumes no responsibility for unsolicited manuscripts and illustrative material. Credit is given on material published. Permission to reprint text material is granted provided credit is given the Virginia Commission of Game and Inland Fisheries and VIRGINIA WILDLIFE, but clearance also should be obtained from contributing free-lance writers, artists and photographers to reproduce their work.

Second-class postage paid at Richmond, Va.

THE OUTDOOR MYSTIQUE

In the outdoor magazines and in our minds the big buck always steps slowly out of the morning mists to be dropped cleanly with one shot by the waiting hunter. Such images aren't tarnished by the roar of four-wheel drive vehicles or the crackle of two-way radios. In this fantasy land the trout fisherman always wears chest high waders, a wicker creel, landing net and a hat with flies around the band.

Canoeists skim over sparkling rapids between silent shores, not over polluted passages surrounded by the roar of automobiles and low flying jets. Hikers stand like sentinels on lonely pinnacles, not huddled in groups of a hundred around overcrowded shelters.

Perhaps for the same reason that the good guy always emerges victorious and gets the girl we don't tolerate ugliness in our outdoor stories. We all know there are hunters who shoot deer from car windows and ground sluice birds. Trout usually bite better on Green Giant corn or marshmallows than they do on dry flies. Noise, crowding and sometimes intense competition are much too easy to find in today's outdoors. So we just pretend all these unpleasantries aren't there. Filtered through the pen of a skillful writer it comes out clean and pure - another outdoor classic.

I guess that is why the CBS special "The Guns of Autumn" was so shocking. It violated all the common decency of good sportsmanship and went straight to the bottom of the barrel to select some of the most sordid examples of hunting. There was no attempt to present the code of the hunter or the principles of good sportsmanship. The good guys didn't win this time - no one did. Obviously not all hunters live up to the dream but that does not mean that most of us are not still trying.

—H.L.G.

LETTERS

Not For the Birds

My son, Mark, and I erected a squirrel nesting box in our backyard last year. We built the box with shelter in mind more than nesting. Having watched a pair of squirrels refurbish an old leaf nest with strips of inner bark from dead poplar branches in January, only to have it ripped apart by a strong wind a month later, we decided to provide them with a more substantial shelter. We constructed a box about 8 x 10 inches with a depth of nearly 3 feet, hoping the depth would discourage starlings from nesting in it. Mark secured the box to the trunk of a locust tree approximately 30 feet from the ground, and to our delight squirrels immediately took up residence.

The first young squirrels emerged from the box in April; a second litter in September. We have been rewarded for our efforts by the privilege of watching the young squirrels play in the vicinity of their house and by getting an opportunity to take some unusual photographs.

William G. Smith
Falls Church

'Cat Encounter

ON New Year's day, 1973, I was walking the ridge of Dudley Mountain in southern Albemarle County. The day was crystal clear following a long spell of cold damp weather. I came out of the woods onto a large rock outcropping overlooking the valley some 1500 feet below and sat down at the edge about 2:00 p.m. to enjoy the tremendous view. Temperature was in the 70's and the air still so that smoke from chimneys in the valley rose perfectly straight like satin ribbons suspended above each dwelling far below. As I was enjoying the scenery, a young tom bobcat sauntered out of the brush, scampered over the rock to an old cedar stump about 25 yards in front of me and sat down, just as I had done, to sun himself. The look of disbelief in his eyes when he turned and saw me is unforgettable.

J. Carr Dorman
Charlottesville

Contents: Classic

I'VE always found *Virginia Wildlife* very worthwhile; however, quite often some of your contents border on the classic. Recent examples: article on monarch butterfly (April 1975), whitetail deer (May 1975), mountain cats (eastern panther, December 1974; bobcat August 1975), Dismal Swamp (June 1975), rattlesnake (May 1975). The purple martins arrived here February 15 this year.

C. H. Atkinson
Richmond

A TURKEY FOR DAD

By RICHARD PAULEY
Lynchburg

Photographs by Bill Cochran

I had never seen those Montgomery County woods any darker than they were that first morning of the fall turkey season. I was making my way up a narrow path beside a small creek, with my father and Bill Cochran, and our only flashlight had expired shortly after leaving my car. Rather than go back for another one, I had decided to go ahead in the dark, because I knew the terrain well and felt confident that I could find the area we planned to hunt.

Before leaving my father's house in Salem, I had briefed dad and Bill on the plan of "attack." There were at least two flocks of turkeys using the area, and both were hanging out around the edge of a harvested cornfield, rarely ranging very far back into the woods. It was just about as good a set-up as any hunter could imagine, especially where such a wary bird as the wild turkey is concerned. What was even more encouraging was the fact that I had been in the area the evening before doing some scouting, and I had been lucky enough to hear at least five turkeys fly up to roost on a short pine ridge not far from the cornfield.

Knowing such a situation does not present itself too many times, I persuaded my father to come along, even though he was somewhat hesitant at first. However, after much encouragement, including my assurance that it was a "sure" thing, he promised to go.

A scene any hunter would love - a double on wild turkeys.

When I phoned Bill and explained the situation to him, he eagerly accepted my invitation and promised to be at my father's house well before daylight the following morning.

The stage was set, but a burdening feeling of doubt nagged me. I had killed several wild turkeys in my years of hunting, a dozen in fact, but my father had never brought one of the big birds to bag. In fact, he had never really hunted wild turkeys at all, although he had seen a few.

There he was getting ready to go after what I consider the smartest thing on two legs, and he had no idea what he was up against. How could I explain that he might hunt a lifetime and never get a wild turkey, when he was fully expecting to kill one the next morning on his first turkey hunt.

I spent a fitful night, dreaming of us looking for wild turkeys but finding no trace of them. At last the alarm shattered the early morning quiet and I hurriedly dressed and drove to my father's home.

I found dad up and dressed, and already pouring hot coffee into three hefty mugs.

"Well, son, I sure hope we all get one, don't you?" he proclaimed.

"It's kind of cloudy, and it could rain," I answered. "Might not be the best conditions for turkey hunting," I said, trying to harness my dad's optimism, but I knew it was too late.

Bill arrived and we all gulped down generous quantities of coffee, and in between sips I explained what I thought might work.

"I think our best bet is to take stands around the base of the ridge," I said, "and hopefully when they leave the roost, somebody will be in position for a shot."

My father and Bill agreed that this seemed like a good plan, and now the rest was up to the turkeys.

"If you have any questions, ask them now," I said. "When we get out of the car over there, we've got to be completely quiet."

"I believe I'd just as soon get a young one," dad said. "Probably be better eating anyway."

I cast a cautious glance at Bill and saw that he too knew my father was being a little too optimistic. As outdoor editor of "The Roanoke Times", he knew plenty about wild turkeys, and knew that no matter how good things looked, the odds were all in favor of the big bronze birds.

"Let's hope somebody sees one," I said, hoping my

father's over-confidence wouldn't jinx our efforts.

We all stumbled up the pitch-black hollow, trying to be quiet, but invariably making all kinds of noise. I soon recognized a small knoll as a spot where I planned for one of us to take a stand. After some whispered discussion, Bill decided to take the first stand, and my father and I made our way out to the lower end of the ridge nearest the cornfield.

"If you get a shot," I whispered, "be sure and shoot only at the head and neck, and whatever you do, don't move!"

I made my way down the other side of the ridge and settled in at the base of a big white oak, as a hint of light began to filter through the treetops.

I glanced around me and noticed that the forest was coming alive with darkness fast giving way to a cool, foggy morning. A rustle overhead caught my attention and I watched a fat grey squirrel gather acorns.

A great rustling of wings made my hair stand on end, as I watched nearly a dozen wild turkeys glide off the ridge behind me and land in the hollow right beside me. I had the old .32 Special up and ready and I knew I was going to get my bird, but it was then that the crazy, impossible thought struck me. I knew from the start that not shooting one of the turkeys right then was a mistake, but all I could think about was my father a little farther down the ridge, and I hoped that just maybe, if I didn't spook them, the big birds would pass close enough for him to get a shot.

Uneasily I watched as the turkeys disappeared down the hollow, and I slowly eased the rifle from my shoulder and put the hammer back on safe. I knew that it would take the flock maybe as long as a half hour to cover the distance to my father's stand, and the thought plagued me that they might pass too far out of range for a shot. There was just one thing left to do.

I made sure all the turkeys were out of sight before moving, but as soon as I stretched my tired legs, I quickly sprinted up the ridge, crossed over and went well down the other side. I turned toward my father's stand and ran as hard as I could go. After five minutes of heart pounding crashing through underbrush and laurel thickets, I came to the area where I had left my dad only a short time before. I walked on, and soon picked out my father's form nestled under a large white pine. He saw me coming, and got up as if to speak, but I frantically placed a finger to my lips and he remained silent.

"What's going on?" he questioned in a hushed voice.

"There is a whole flock of turkeys coming right out the side of this ridge," I gasped, "and if we're lucky, we might be able to call the whole bunch right into our laps."

We crept across the top of the ridge, and eased slightly down the other side and waited. I could hear nothing, but I knew we were in a good position to intercept the flock. Carefully, I unwrapped my cedar box call, and scratched out three plaintive clucks. We waited, but nothing happened. I called again, but the only sound that broke the morning stillness was the lonely cry of a pileated woodpecker. A sick feeling swept over me, as I knew the turkeys had eluded us. I glanced at my father and saw that he hadn't yet realized what had happened. He was still staring out the ridge just like he was sure the turkeys had to come.

I followed the direction of his gaze, and there they were. Three wild turkeys were within fifty yards and still coming and several more were close behind. The fog was thick in places, and I slowly eased the rifle to my shoulder, noticing that dad had done the same with his double barrel. My heart was pounding, and I risked a quick look at my father. There he sat, gun up and eyes unblinking, with no show of excitement or emotion.

The turkeys were clucking softly now, and one old hen in the lead began to show signs of nervousness. She jerked her long neck up and down and eyed us suspiciously. I knew that without the fog screening our positions, the hen would have already blown the whole set-up. The time had come to make a move.

Without moving, I whispered to my father, "When I count to three, shoot! You take the one on the right."

"One, two, three..."

As I think back on it now, it seems almost comical. There was dad running past me like a boy, and pouncing on the still flopping turkey. Hoisting his bird and mine, we slapped each other's backs and laughed, almost cried, shook hands, and said crazy things that would mean little to people who have never experienced such a moment. I wouldn't even want to know what the odds were against us both getting a wild turkey that morning, but I will always remember what dad told Bill.

"Why, Cochran," he grinned, "this turkey hunting isn't as hard as I thought it would be."

Bill and I could only shake our heads in amazement. After all, what could we say? Dad had his turkey.

Author and father head home with Thanksgiving dinner.

Scenic River on the Shelf:

THE STAUNTON

By JOE WISEMAN
Virginia Beach

Conservationists across Virginia recently found cause to rejoice when the 1975 General Assembly passed legislation designating the Rivanna as Virginia's first scenic river. Efforts to achieve similar distinction for a ten-mile section of the Staunton River between Long Island and Brookneal resulted in less reason for celebration. After several anxious moments, the Staunton River Bill was passed by the House, only to run into a maelstrom of opposition in the Senate. The committee meetings, hours of testimony, and seemingly endless debate finally gave way to a heated floor fight; battered and weakened by a crippling amendment, House Bill 72 was finally passed. It was a hollow victory, however, for many who had worked so hard on behalf of the Staunton. Full scenic river status will come only if the legislation is re-passed by the 1978 General Assembly. For all practical purposes, the Staunton River Bill has been effectively bottled up, and put on the shelf for three years.

One fact to emerge from the legislative proceedings surrounding the Rivanna and Staunton River Bills is how little many people know about Virginia's Scenic Rivers Program. The scenic river concept is not new. Concern over the future of our free flowing waterways compelled conservation groups and other interested citizens to action during the mid-sixties. Responding to this urging, the 1968 General Assembly passed a joint house resolution instructing the Commission of Outdoor Recreation to conduct a study of Virginia's rivers and propose a plan providing for their protection and preservation.

Acting under this directive, the Commission contracted with the University of Virginia to conduct a scenic river study having a twofold purpose: to determine which if any rivers, sections of rivers or streams were deserving of special status as scenic rivers; and, if so, to outline the best ways of protecting and preserving these rivers. The study itself transversed the length and breadth of the Commonwealth, covering 72 main streams and tributaries. The result was a list of 29 candidates for scenic river status, and the recommendation that the General Assembly provide for a Virginia Scenic River System, to be overseen by the Commission of Outdoor Recreation.

The Staunton River is an excellent choice as a Virginia Scenic River. The river corridor is varied with islands, bluffs, rolling hills, sandy beaches and flood

plains with extensive tree cover creating a changing landscape. Large boulders, rapids, ledges and tiny waterfalls add to one's visual enjoyment of the river.

The banks of the Staunton are lined by dense multi-storied forest cover. The understory blocks the view inland from the river in the summer months. This has the effect of creating a green-walled corridor, isolating the river traveler from man-made development until the foliage is changed by leaf fall.

Dominant tree species are sycamore, river birch, black willow, ash and sweet gum with locust, tree of heaven, redbud and box elder being somewhat less numerous. In rare instances, one may spot a maple, paw-paw, hickory or blackgum along the river bank.

In the river, mosses and river grass are visible in shallow water. The rocks are usually moss-algae covered and river grass surrounds small islands and grows along the banks in the shallows.

The Staunton has one unusual quality that alone should justify protection of the river. Landlocked striped bass from Buggs Island Lake must come up the Staunton to spawn each April and May to perpetuate the species. (One of only two such areas in the world, it offers a unique opportunity to collect eggs which form the basis of rockfish fisheries in Virginia's other large reservoirs. Just this year anglers caught thousands of large stripers in Smith Mountain that can be traced directly to this program. The Game Commission's significant investment in hatchery facilities on the Staunton serves not only Virginia but other state Game Commissions around the country. Virginia in return receives walleyes, muskellunge and other exotic species from these states.) At this time Appalachian Power Company releases sufficient water from its Leesville Reservoir to maintain a 6.8 foot minimum stage at Brookneal for a 45 day period during the spawning season. Any dams on the river would prevent migration by the rockfish and other development that would impair water quality would adversely affect spawning.

Game animals frequenting the river corridor include deer, turkeys, quail, doves, rabbits and squirrels. Hunting is a popular activity locally with river bottom lands providing the best areas.

The river channel below Long Island is 200 feet wide until it reaches the head of Hale Islands where it expands to 300 feet, becomes shallow and breaks into many small channels through the islands. As this myriad of islands is approached, the distant din of rushing water becomes a roar. Swift water sweeps by boulders and forms sparkling riffles and rapids as it passes over rocks and ledges. Clear pools appear in deep, calm areas of the channel. The river repeats this pattern of wide, flat water narrowing into small islands and rapids as it meanders eastward.

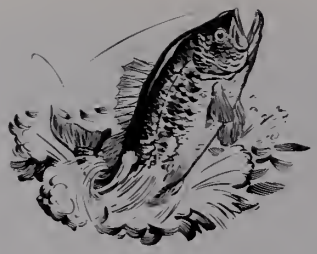
Drifting along through the quiet beauty of the river, one can allow his imagination to conjure up the sights and sounds of those long ago days when Samuel Pannill's plantation with its mills, shops, stores, farm buildings and fleet of batteaux formed a bustling center for agriculture and commerce on the banks of the Staunton. In the Melrose area, the river is lined with sandy banks shaded by bottom land hardwoods flanked by high bluffs.

Landowners and others with interest along the river corridor have expressed concern over the possible loss or curtailment of property rights. The Secnic Rivers Act of 1970 poses no such threat. Once a river or section of a river is designated as a "scenic river," the Commission of Outdoor Recreation is authorized to acquire property of interest therein for the purpose of protecting the river. Such acquisitions must be by either of two methods, and this is of utmost importance. Property for scenic easements may be acquired either by gift to the Commonwealth, or outright purchase. The Act specifically prohibits, by name, the exercise of the right of eminent domain.

Other eyes are also looking at the wild and beautiful Staunton. The Southside Electrical Cooperative has invested a considerable sum of money studying the hydroelectric potential of the Staunton watershed. In times of ever growing energy needs, such a proposal cannot be taken lightly. Dams are one solution, though by no means the only solution, to the energy dilemma. It is, however, a solution with a frightfully high price tag in terms of its total impact on the environment.

When the time comes to try the case of the Staunton once again, hopefully thoughtful heads will prevail. Man has demonstrated many times his ability to build dams both large and small; but with all his expertise and technology, he has yet to learn how to make a river.

Canoeists have long recognized and enjoyed the beauty and character of the Staunton.



How to Catch a Bass

By STEVEN W. RUCKEL
Blacksburg

So you want to become a bass fisherman. Want a nice largemouth mounted on your den wall? Want to impress your friends? Very well then, the question is how can you catch a bass?

Perhaps the best way is to start from the beginning, with basic equipment. If you are completely unfamiliar with the fine art of fishing, I suggest you acquire a good book on the subject and read it. Then reread it. This will not make you an expert, but will give you a broad understanding of the sport.

Armed with your new-found knowledge and growing confidence, you are ready to select your weapons - in this case rod, reel, tackle box, lures and other miscellaneous equipment essential to bass fishermen. Here you have a choice. Do you want a bait casting, spin casting, spinning or fly fishing outfit? Your decision will require that you decide whether you want a casting rod with heavy, medium or light action, a spinning rod with heavy, medium or light action, or a seven, eight or nine foot fly rod. Perhaps you would rather have a "worm rod." Or maybe you would prefer to go the ultra-light route. Your choice will determine whether you want to fill your tackle box with spinners, rubber worms, heavy plugs, wet and dry flies, or a combination of these lures.

After consulting your trusty fishing manual, you decide that the six and a half foot medium action casting rod with a spin-cast reel is what you need. This outfit, you are told, is easy to cast and totally eliminates the age-old backlash curse of the conventional casting reel. You now visit your local sporting goods store and, after much walking and many comparisons, proceed to select the equipment you want. With the salesman's assurance that "This is the outfit that will catch the big ones," you pick the rod, reel, line and lures you desire (plus a few "special" lures he suggests), pay an exorbitant price for them, and go home. There you forget your aching feet and arrange all your tackle near the door so you can make a quiet get-away the next morning. (The book indicates that early morning is the best time to catch bass.) That night, instead of counting sheep, you count ten-pound bass jumping over lily pads.

At 4:30 a.m. the alarm clock goes off. You stagger out of bed, squint into the dark morning, and wonder who set the alarm for such an outlandish hour. Then you remember. Today is the day you are going to harvest that boatful of bass the tackle salesman promised you would catch if you used his tackle. (Incidentally, it is not wise to fill the boat with fish - game wardens frown upon exceeding the limit.)

By the time you have inhaled bacon, eggs and coffee, your arousal level is at a peak. You feel cocky and a little adventurous - like the time you climbed your first tree or sneaked your first cigarette. Tossing your tackle into the trunk of the car, you head for the pay-as-you-go fishing lake nearby. After shelling out the $1.50 fishing fee, you crawl into a leaky rowboat and shove off into the misty dawn. You row until you find a calm area of water near shore, then drop - rather, gently lower - the anchor.

The moment of truth is near. The book suggests that surface plugs are better in the early morning, so you snap on a frog-colored Jitterbug and prepare to cast as close to shore as possible. Most likely, you will find your quarry near an old stump or under an overhanging bush, waiting to gobble up anything that moves. When you cast, be ready for anything, and don't be frightened when he breaks the surface and inhales your plug. Your first cast drowns the Jitterbug ten feet away in a splash that shatters the stillness like a baseball passing through a plate-glass window. Your second cast, a bit longer and more subdued, produces a fine string of slimy, green moss. The third cast is just a few inches longer, and the treble hooks wrap themselves around a small willow on shore. No amount of pulling or cursing releases them, so you hoist anchor and row in to retrieve your $1.75 plug. Don't be discouraged, though, even after striking out on the 50th cast; the book states that patience is the virtue of every good fisherman. You smile through your teeth, glare at the rising sun, and wish you had remembered to bring your sunglasses.

By mid-afternoon, you have changed lures hundreds of times, varied your retrieve in every possible way, and obtained free of charge a magnificent sunburn. Your vocabulary increases as you discover words and phrases you didn' tealize you knew and apply them generously to the wind, the sun and, most of all, those finicky bass.

At this point you reel in your line and collect what sanity you have left. But, like all true sportsmen, you accept defeat and vow to return another day. As you leave, the manager of the lake asks if you had any luck. With noticeable dejection in your voice, you reply, "No, I didn't catch a single bass."

"Bass! Good Lord, mister! There hasn't been a bass in this lake in twenty years."

ANOTHER CHANCE

By GREG ALKER
Richmond

"Here they come; now stay calm." I couldn't stay calm. I was so excited right now the palms of my hands were wet, my stomach was in knots and the seconds felt like hours. Closer, closer and closer the graceful animals came to us. Then a sharp "now" rang out. I stood up, pulled the weightless gun up against my shoulder and fired, the gun pounding against my shoulder as I fired again and again.

My stomach collapsed as I saw the three deer run off untouched. My heart stopped beating for a second and I felt a burning sensation in my eyes. The gun now suddenly became heavy and I put it on my shoulder and just stared.

"Don't worry about it; they're fast animals and it takes years before you lose the pressure." I looked up and saw Frank, the man who had just made the moment possible.

As we walked back to the car I felt miserable. I held off the tears but couldn't hold off the disappointment. Then we met a group of hunters who had also been out in the woods.

"Wha' was all tha' shootin' 'bout?" they asked.

My friend Frank didn't want to tell them, but he had to.

Well, there was a lot of laughing and hollering after Frank had told his tale. That's what made it really miserable. I started to get that burning sensation in my eyes again, but I couldn't cry, not here. I was with men so I had to be a man.

It was around 12:30 when we reached the store for lunch. I wasn't very hungry but choked down a box of Cracker Jacks and a coke. Then everybody gathered around to see where we should hunt that afternoon. I felt it was useless for me; a buck never comes to the same place in the woods twice in one day. It was impossible.

We got our positions and headed out. No one said anything, wishing and hoping that the big buck would come to them. I was feeling disgraced and afraid, however, afraid of being the goat all over again. The burning sensation in my eyes returned but once more I held it off. Then conversation eased my disappointment a little. Everyone was saying he was going to get his buck this afternoon - even me.

We got our guns from the car and headed off to our stands. I felt as lonely as one fish in an entire ocean. Frank placed me on a stand and whispered a cheerful good luck. I sat there straining my eyes, hoping for another chance. An hour went by, and I knew I wasn't going to get that chance. I heard some geese flying overhead and looked up, but saw nothing there. Then another sound sprang to my ears. I jerked my head down to see a small sapling being ripped down. A big brown object was coming my way. The crashing and thrashing was tremendous; my spine tingled and my nerves shook with fear.

Then one deer jumped out of the brush and I flung the gun to my shoulder and fired, not even bothering to stand up. The deer collapsed a few yards away from me. My stomach felt jumpy and my nerves still tingled. I ran with all my might to where the deer had fallen, and there lay the buck at my feet. The burning sensation returned to my eyes, but I couldn't hold off the tears this time. I had finally killed my buck.

PUMPED POWER: POTENTIAL OR PROBLEM?

By DAVID H. BENNETT
Department of Fisheries and Wildlife Sciences
V.P.I. and S.U.
Blacksburg

Historically, the 1970's will probably be known as the first years of the Energy Crisis. Consumers are confronted with shortages in a variety of things from food to energy supplies. Shortages of electrical power will potentially be one of the most significant impacts on future decades. This situation already exists in some of our larger cities (especially in the Northeast). Projections for electrical energy needs in the United States indicate that demands are more than doubling every 6 to 10 years. In some areas, demands for electrical power may exceed current predictions.

Nuclear and fossil fuel plants are being constructed throughout the country to meet electrical power demands. Optimally, production by these facilities is at constant peak efficiency. Other facilities such as conventional hydroelectric, gas turbines and pumped storage plants are used to provide electrical power during peak or high demand periods. Conventional hydroelectric power is the most economical of the "rapid start" power sources. Unfortunately, hydroelectric facilities are limited by terrain and require a large, dependable volume of high velocity water. The few remaining suitable hydroelectric sites also have high recreational and aesthetic value. Such factors lead to intense conflicts between power development and the environment. Coupled with these problems, increased costs and shortages of natural gas will cause production of peaking power by gas turbines to become less and less economically feasible. For this reason, U.S. power production companies are showing increasing interest in pumped storage power generation to meet peak power electrical demands. Pumped storage involves use of electrical power to pump water to an upper reservoir that can be released to flow through turbines and generate electric energy.

Pumped storage power production is rapidly providing a significant portion of our electrical power base. Presently, 20 pumped storage projects are operational with more than 30 projects either under construction or in some form of the planning stage. Currently, most projects are situated in the southwestern and eastern United States near main population centers. A few scattered projects are in other parts of the U.S. More than 1,000 sites for pumped storage projects have already been selected in the continental United States.

The concept of pumped storage originated in Europe in the early 20th Century, but interest in the idea has expanded greatly since development of the reversible turbine. Reversible turbines can be used to generate electrical power, then reversed to pump water from the lower reservoir to an upper basin for reuse. Two types of pumped storage projects are generally recognized: a combination project or run-of-the-project, and a pure project. A combined project employs two dams and two reservoirs. The river must be large enough to use conventional hydroelectric turbines for power generation. The Smith Mountain Pumped Storage Project in south central Virginia is an example of a combination pumped storage project; a pure pumped storage project uses two reservoirs with an initial supply of water. Water levels are supplemented to compensate for water losses from evaporation and seepage. The Muddy Run Pumped Storage Project in eastern Pennsylvania is a pure pumped storage project.

The operations of combination and pure pumped storage projects are similar. Water stored in the upper reservoir is used for most power generation during peak electrical periods in the morning and evenings. Water used for power generation gradually fills the lower reservoir and lowers the water level of the upper reservoir. When excess electrical power is available from base power production facilities, reversible turbines are used to pump water to the upper reservoir. Consequently, the upper reservoir is filled while the lower reservoir is drawn down. Pumping occurs each night and on the weekends when overall power consumption is reduced. Volume of water pumped to the upper

reservoir at night doesn't equal the amount of water used for generation and as the weekend approaches the lower reservoir approaches maximum capacity. Then on the weekend, the water storage in the upper reservoir is returned to capacity as water pumped from the lower reservoir causes it to reach its lowest level of the week late Sunday or early Monday in preparation for Monday morning generation.

The biological impact of pumped storage projects is related to the magnitude and frequency of vertical water level fluctuations. In lakes with stable water levels, the shoreline (littoral) area of a lake is generally highly productive. In lakes with normal water level fluctuations, macrophytes (rooted aquatic plants), periphyton (attached plants and animals), and aquatic insects flourish in the shallow water area. Operations of pumped storage projects cause shoreline areas to be alternately flooded and dewatered. This shoreline area becomes in effect a biological desert. Few plant and animal forms are able to survive in such an environment. Aquatic insects and forage fishes require these littoral zones for part of their life cycle. They, in turn, are fed upon by some game fish species. Therefore, pumped storage reservoirs indirectly affect some of the recreationally important species of fishes.

Effects of the vertical fluctuations on fish spawning is one of the greatest concerns over pumped storage projects. Sunfishes and basses are the most abundant group of sport fishes in southern and eastern reservoirs and are the fishes most affected by water level fluctuations. These fishes are members of the sunfish family, Centrarchidae. Centrarchids characterically spawn in a preconstructed nest. Egg development and hatching occur within a few days in these nests. Most centrarchids spawn from a few inches of the surface of the water to a few feet in depth; consequently, water level fluctuation below the nest site would expose the nests to drying and kill the spawn. Fishery potential of these reservoirs would be greatly diminished with reduced natural reproductions. This problem can be eliminated through intensive biological research programs. To eliminate this spawning problem for important sport fishes, water levels in most pumped storage reservoirs are stabilized during the season. Information currently being gathered from scientific studies, however, indicates that some species of centrarchid sport fishes can adjust to the fluctuating water levels and are spawning at deeper depths in some pumped storage reservoirs.

Combined pumped storage projects also interfere with fish spawning migrations. The lower dam may block further upstream migrations for spawning fishes. Even with fish passage facilities, normal movements may be adversely affected by changing currents induced by project operations. Spawned fish which normally migrate downstream might migrate towards the turbines, i.e., upstream, while pumping operations cause reverse currents. Other forms such as juveniles that migrate with the currents could be affected in a similar manner.

Siltation due to water movements from project operations creates both biological and aesthetic problems. Bottom types of clay or heavy soil subjected to water movements either from project operations or boating activities result in high turbidity and sedimentation. Sedimentation covers nesting habitat, reduces bottom fauna production, can retard growth of sight feeding fishes, and reduce angler efficiency. Drawdowns expose large areas of shoreline to view. Few plants can survive the fluctuating water level conditions. Exposed mud flats greatly reduce recreational appeal of such an area. However, shoreline areas that contribute to the siltation can be stabilized to minimize further erosion.

Another potentially adverse effect that may be modified in project design is level of discharge from the upper reservoir. Water attains maximum density at about 39°F; density decreases as water temperature increases. Consequently, in summer when reservoir waters stratify or are layered, coolest waters are found at the reservoir's bottom. Release of these cooler waters during power generating (when water is run from upper to lower reservoir) can reduce feeding rates which in turn affect growth rates, retard normal reproductive development and spawning, increase mortality of eggs and juveniles, increase number of deformed individuals and decrease overall production of sport fishes in the reservoir. Cooler, deeper waters are often low in dissolved oxygen content which also may have detrimental effects on fish populations. However, with suitable design and operations, waters at any desired temperature can be directed into the lower reservoir, eliminating the undesirable effects mentioned above in warmwater impoundments.

Cooler water areas in the lower reservoir are sometimes managed to provide a coldwater fishery when suitable water quality exists. Pumped storage projects also offer a potential for boating enthusiasts, anglers, and waterfowl hunters. In many areas, reservoirs created by pumped storage projects offer the only form of reservoir-type recreation.

The future of pumped storage reservoirs for recreational development in the United States should be the combined responsibility of resource managers from industry, government and academia with inputs from the public. Care must be taken during project development to maximize the potential of these impoundments for power generation, reaction, fish, wildlife and the aesthetic appearance, and to minimize potential environmental degradation.

Use of pumped storage appears to have many assets for producing reliable, economical peaking power. We must not forget the power needs of the public, nor should we sacrifice the environment. We must skillfully interweave the overall recreational potential so that the resulting aquatic resources can be judiciously utilized.

By R.E.B. STEWART III
Norfolk

Early one spring, our float fishing party reached the confluence of the Rappahannock and the Rapidan on the crest of a flash flood which had overtaken us during the night. I glanced over my shoulder in time to see an Old Town canoe being swamped by the high standing waves. Its ejected occupants were struggling toward shore, and other boats behind us were heading to their rescue. The overturned Old Town shot by me floating high and fast with well secured rubber equipment bags protruding from either side like bulbous pontoons. I paddled my Grumman after it in hot pursuit. A floating cushion, which had been flung from the overturned craft, was in my path. I broke my furious pace long enough to snatch it on board. As I emerged from the boulders and grassy islands of the confluence, I picked up another cushion and a paddle.

The Old Town was just ahead now, on a collision course with a log jam which would reduce it to splinters and shreds of canvas. Two smaller objects were bobbing along just off my bow. The first was a plastic bag. As I passed it I read the label: Freeze Dried Apples. No time for that, I thought as I reached out to retrieve the paddle floating just ahead. A few strokes later I managed to grab the nylon painter trailing from the stern of the Old Town. I grasped the end of the painter with my teeth and paddled savagely to keep up with the bobbing canvas-covered monster which was towing me towards the log jam. Then I saw my last hope - a single limb reaching skyward from a submerged tree. It was dead ahead. The Old Town went to the right of the limb. A quick draw stroke took me to the left. I grabbed the rope with both hands and the canoes stopped with a jolt. Hand over hand I pulled my canoe up beside the limb and managed to throw a hitch in the painter. After securing my canoe, I sat down in the bottom of my tossing craft to eat some lunch and await help.

After what seemed like hours, five canoes rounded the bend above me and put in to shore. Several long rescue lines were spliced together. One end end was tied to a boat cushion and floated down to my position. I tied the rescue rope to the Old Town. As the edge of my knife blade touched the taut painter, it snapped like a mandolin string. The rescue line popped from the water and went tight. Had it not been snubbed around a stout tree on the bank, eleven strong men would have been jerked into the water. Gradually they pulled the stubborn Old Town to shore. I released my painter from that frail limb of security and paddled like a man obsessed to ferry myself out past the edge of the log jam. Our take-out point was only a short distance downstream. After beaching my boat high above the angry waters of the Rappahannock, I started a small fire, cracked open a bottle of brandy, and began to review the excitement of the last few hours.

We launched the day before in peaceful waters at Kelly's Ford and enjoyed a good day's fishing. The rain had started late that afternoon and we had made a high ground camp. As is our custom upon making camp, we thrust a sapling into the sand at the water's edge as a water gauge. By the time we turned in for the night, the river had risen more than a foot. During the night it poured, as a continuous series of thunderstorms passed through. In the morning the river was up four feet and ripping. There was no place to get off the river between our present camp and the planned take-out point. We had to push on and count on our veterans to get the rookies through the rough spots. We had done a good job until the high haystacks of the confluence overcame the low freeboard of the Old Town.

My reflections were interrupted by the noisy arrival of my companions. The pair who had taken a dip at the confluence scrambled up the bank and kissed terra firma in the best tradition of the crew of the Santa Maria. The warming fire was piled high with driftwood and waterproof bags were opened to produce towels, dry clothes and rounds of spirits for the group. "Did you lose anything?" I asked the owner of the Old Town. "Yep, my wallet, watch and ring," was his dejected reply. "Where were they?" I inquired. "In a plastic bag with some freeze dried apples."

THUNDER ON THE RAPPAHANNOCK

VIRGINIA WILDLIFE ☆ ☆ ☆ ☆

CONSERVATIONGRAM

Commission Activities and Late Wildlife News . . . At A Glance

"WILD TURKEY IN VIRGINIA" PUBLISHED BY GAME DIVISION. The Game Division of the Commission of Game and Inland Fisheries has published a new 135 page book on the wild turkey of Virginia. The new publication discusses in detail the Game Commission's efforts, which began in 1929, to restore the wild turkey to the forests of the Commonwealth. Written by game biologists Joe Coggin and Charles Peery, the book recounts the Commission's restocking efforts and, with the aid of charts and maps, details county by county turkey restoration. Featuring a four color cover photograph by noted wildlife photographer Frank Hanenkrat, the new turkey book will be available in limited quantity from the Game Division, Commission of Game and Inland Fisheries, 4010 W. Broad St., Richmond, Virginia 23230.

VIRGINIA AREAS INCLUDED IN NEW WILDERNESS BILLS. Recently introduced legislation would classify numerous areas in the Commonwealth as wilderness areas. These include the Shenandoah National Park (112,786 acres--HR5823), 2,400 acres in Back Bay National Wildlife Refuge (HR5893) and 6,500 acres in Chincoteague National Wildlife Refuge (HR5893). HR7167-7206 would designate as wilderness in Virginia; Chincoteague National Wildlife Refuge, Assateague Island National Seashore and Shenandoah National Park.

HUNTER SAFETY HOME STUDY COURSE NOW AVAILABLE. A Home Study Course to supplement the present volunteer Hunter Safety Program in Virginia is now available, according to Capt. Jim Kerrick, Safety Officer, Virginia Game Commission. The new course was initiated to serve those who could not attend regular Hunter Safety Courses. It is expected to act as a supplement to the present program, not to replace it. The 80-page manual covers; hunting traditions and ethics, the hunter and conservation, hunter's responsibility, introduction to safety, firearms and ammunition, fundamentals of shooting, safe gun handling, bowhunting, black powder and muzzleloading, vision and the hunter and identification and field care of game. The course may be obtained from the Va. Game Commission, 4010 W. Broad St., Richmond, Va. 23230 for $1.00 per copy. Checks and money orders should be made payable to the Treasurer of Virginia.

CIVILIAN MARKSMANSHIP PROGRAM IN JEOPARDY. The civilian marksmanship program which, for over seventy years has served as the foundation of America's international competitive shooting participation including the Olympic and Pan American Games, is in jeopardy, according to the National Shooting Sports Foundation. The U.S. House of Representatives has boted to remove from the Defense Department appropriations bill the entire $233,000 budgeted for the National Board for the Promotion of Rifle Practice. If this action is upheld, the civilian marksmanship program would be eliminated. The responsibility for the continuation of the program now rests with the U.S. Senate which can restore the needed money when it takes under consideration the defense funding bill. The NSSF reports, however, that such action depends upon the strength of the public's reaction to the proposed cut. If sportsmen fail to react to the proposal, and do not inform members of the Senate as to their personal feelings in the matter, the Civilian Marksmanship Department will be dismantled. This then could spell the end of international shooting competition for Americans.

Cooperation in Nature

By VINCENT J. LUCID
Division of Forestry and Wildlife Resources
V.P.I. and S.U.

SURVIVAL among animals does not always depend upon strength and speed. It is, however, dependent upon the degree of adaptation to a particular niche; and in certain instances this may be increased by cooperation with other organisms. This may sound contradictory to the popular conception of the law of the jungle, but it's true. Collaborating with other organisms, or simply taking advantage of their presence, often can provide better food or protection for an animal than it could obtain entirely by itself, or with the help of others of its own kind.

Although there is some disagreement among scientists concerning the definition of terms, a widely accepted scheme recognizes three types of positive interspecific relationships. *Commensalism* refers to an association in which one species is benefited, but the other is not affected. *Protocooperation* is a relationship that benefits both populations but is not obligatory. *Mutualism* is used to denote a relationship in which two species collaborate to their mutual advantage, and neither can survive without the other.* These types of interactions are widespread throughout both the plant and animal kingdoms; some of the most remarkable examples are provided by birds in their associations with various plants and animals.

In most instances, these associations involve a means of obtaining food. In the vast majority of the food-finding associations, the birds are not totally dependent upon the relationship. Although they do seek out and take advantage of them, they can, and often do, manage to survive without such relationships.

It is not uncommon to see some birds attending grazing cattle, where they feed on the insects which the grazers scare up from the grass. One bird which makes a regular practice of attending cattle is the cowbird; hence, its name. This bird was formerly known to have this commensal relationship with the American bison when vast herds ranged the plains. The cattle egret, which not long ago invaded the southern United States from Africa, is another bird which obtains a substantial proportion of its food with the unwitting help of grazing cattle. Starlings and English sparrows are also often found in close association with large herbivores.

Often birds take advantage of the presence of man and his works. In agricultural areas, a number of birds have learned to follow a man with a plow, to feed upon grubs that are exposed and insects that are roused. Similarly, gulls regularly follow boats for the garbage thrown overboard. A noisy flock of gulls swarming over a fishing boat is a common sight indeed. An incidental way in which gulls take advantage of the boat they follow is to ride the updrafts created by the moving vessel, and to soar along effortlessly at the same speed

* *Symbiosis* is a term sometimes used in the same sense as mutualism, other times to include protocooperation, or in a still broader sense to include commensalism and parasitism as well.

as the boat. It has been reported that certain species of hawks will fly alongside a moving train. When small birds are frightened by the noise and movement of the oncoming train, the hawk will dart ahead and snatch the bird in mid-air.

In all the cases mentioned above, the mammalian member of the association unintentionally provides food for the bird. He usually gains nothing and loses nothing from the association. So, these are all examples of commensalism.

Positive interrelationships may also be important with respect to nesting by birds. Some birds have been known to build their nests very near nests of other animals that have a stronger means of defense against intruders. In this way, the birds are included within the area defended by their neighbors. For example, English sparrows and grackles have been known to nest underneath the large nests of ospreys. The osprey, a fish-eater, is unlikely to prey upon its avian tenants. Other birds have been known to build their nests near the homes of aggressive, stinging insects, such as bees or wasps. In many of these nesting associations the birds do not feed upon the insects and the insects do not attack the birds; and the birds gain some degree of protection against predators. These situations, involving aggressive birds or insects, also fit the definition of commensalism, for the protectors appear to derive little, if any, benefit from the association.

Often man unwittingly provides food or nesting sites for birds such as pigeons, starlings, English sparrows, barn swallows, and chimney swifts. Some of these birds are usually considered pests, and the relationship may be one of parasitism. However, in situations in which the birds benefit and man is unaffected, then a commensal relationship exists. If the birds consume bothersome insects, then both man and bird benefit and protocooperation exists. A mutually beneficial relationship exists between man and bird when you put out a nest box, bird feeder, or birdbath and gain pleasure from the birds while providing for their needs. Purple martins, provided with an apartment house, will also give you some relief from pesky mosquitoes.

There are examples of protocooperation between birds and plants. Hummingbirds feed upon the nectar and tiny insects caught in it at the base of flowers. The bird obtains food and the flowers benefit because the hummingbird gets pollen on its forehead, and transports it to another flower, as do bees, resulting in cross-fertilization. Woodpeckers, feeding on insects on the trunks and branches of trees, protect the trees from insect infestations; thus both organisms benefit.

For examples of protocooperation between birds and other animals, let us look to more distant lands. There is a bird in Africa called the oxpecker, which maintains a relationship with large grazing mammals including the rhinoceros, giraffe, buffalo and some antelope. The bird actually feeds upon the ticks and other ectoparasites that occur on the host. The bird obtains food, and the host animal is rid of harmful parasites; thus both animals benefit from the relationship. Observers report that the bird also warns its partner of approaching danger. Many hunters complain that the alarm notes of the bird cause the large animal to retreat, interfering with the success of the hunt.

The classic case of protocooperation between a bird and a reptile is that of the Egyptian plover and the crocodile. This bird, often called the crocodile bird, is reported to enter the open mouth of a crocodile and pick leeches from the teeth of the reptile. However, the more common behavior pattern of this bird is to walk about on the back of the crocodile, picking off parasites; only occasionally does it actually enter the crocodile's mouth.

A remarkable situation is that involving the honeyguide of Africa. This bird maintains a mutually beneficial relationship with honey badgers and humans. Unable to open a beehive by itself, this bird acts as though it were consciously guiding the man or badger to the location of a hive. Then the bird suddenly stops making its loud churring noise, and quietly waits for its partner to open the hive, partake of the comb and honey, and depart. Only then does the honeyguide fly to the opened hive and feed on the remains of the honeycomb. It is a tradition among the African honey-hunters to leave a large piece of comb as an offering to the honeyguide.

Examples of mutualism, in which the relationship is necessary for the survival of both partners, are rather rare in the world of birds. However, like other vertebrate animals, birds by themselves cannot break down such substances as beeswax and cellulose. Instead, they rely upon intestinal bacteria and yeasts in order to use such materials as a source of nutrition. Some birds with limited diets, including the honeyguide of Africa, are entirely dependent upon their intestinal flora to break down their food into a usable form. The bacteria depend upon the bird to provide a place to live and a source of their own nutrition. This, then, is mutualism.

Not all positive relationships fit neatly into the definition of one of these three types of associations. Because they have developed in an evolutionary manner, there are certainly zones of overlap between the categories. Furthermore, a number of relationships border on parasitism, sometimes causing harm to one of the species involved.

Darwin's emphasis upon "survival of the fittest" has turned much attention toward the so-called negative relationships of competition, predation and parasitism. However, it is possible that the positive relationships may have as much influence as the negative relationships in determining the structure and dynamics of the populations and communities involved.

DUCK HUNTING GLOSSARY

Compiled by DAVID P. CHANCE
Richmond

This glossary is intended to aid wives, mothers, non-hunters and small children who wonder where their father is, in understanding the language of duck hunters.

Blind - A place of concealment built either in and above the water or along the shore; usually camouflaged to resemble nothing any duck has ever seen before except possibly some other blind. Typical statements in which you hear the term "blind": (1) We need to rebuild the blind this year; (2) I hope the blind wasn't washed away during the storm; (3) We lost the blind in the storm; (4) Let's hope the birds are blind!

Call - A small, hand-held device made of wood and/or hard rubber which when operated by the hunter is supposed to make sounds like those made by live birds. Two basic types: (1) the duck call which imitates the mallard and black ducks; (2) the goose call, which imitates Canadian geese. Typical statements: (1) Listen to my new duck call; (2) Listen to my new goose call; (3) What do you mean, use the calls only as a last resort? (4) Gee, I'm so sorry I dropped your call in the water!

Decoy - A device built to resemble a live duck or goose sitting on the water to which a length of cord with an anchor is attached to hold the decoy near the blind. These are used, somewhat optimistically, to lure birds within gun range. Typical statements: (1) How do you like my new decoys? (2) Gee, you don't often see merganser decoys; (3) I think we did a good job of repairing the old decoys; (4) One of the decoys just sank!

Duck - A type of waterfowl with the mysterious power to reduce sane, intelligent men to babbling idiots. Typical statements: (1) The ducks haven't migrated yet; (2) The weather had the ducks acting funny; (3) The ducks won't decoy; (4) Darn you, duck!

Goose - See duck (only larger and more so).

Limit - Refers to the number of ducks and geese that a hunter may legally take. Often discussed but seldom reached. Typical statements: (1) Sure hope we get our limits! (2) In this weather we should be able to get our limits; (3) I've just reached the limit of my endurance; let's go!

Outboard - Gasoline engine which is placed on the stern of a boat to provide propulsion. Typical statements: (1) The motor won't start! (2) I think the spark plugs are fouled; (3) We've sheared a pin! (4) Paddle!

Sleep - This common term is often used by duck hunters, but it is generally known that they get very little of it. Typical statements: (1) Sorry, I overslept; (2) Boy, could I use some sleep; (3) Quit snoring; you're scaring the ducks; (4) I wish I had overslept!

Waders - Type of boot used by waterfowl hunters. Usually made of rubber and canvas and supposedly waterproof; two types - (1) hip waders which hold about 5 gallons each, and (2) chest waders which hold at least 20 gallons. Typical statements: (1) I patched my waders last night; (2) My waders leak! (3) I think it's shallow enough here to walk the rest of the way; (4) Oops!

Weather - This is the term most used by duck hunters and it, of course, refers to nature and the elements. The reason it is included in this glossary is that duck hunters seem to use it contradictorily; for example: Good weather means freezing rain, sleet and snow with a howling wind and temperatures somewhat below freezing. Bad weather, on the other hand, means clear skies, light winds, and moderate temperatures. Typical statements: (1) This is lousy duck hunting weather; (2) Any duck flying in this weather will probably die of heat exhaustion! (3) It's perfect weather; where are the ducks? (4) Boy, it's cold!

There are, of course, thousands of other terms (many of which are unprintable) used by waterfowlers. It is hoped that this short glossary will be of some help to the uneducated in understanding the conversation of those strangely dressed men with the far-away look in their eyes, the duck hunters.

Cooperative Wildlife Management in Northern Virginia

By J. E. THORNTON
Supervising Game Biologist

Managing wildlife "cooperatively" has long been a way of life in Virginia. It has proven to be the only practical way to provide adequate hunting and fishing opportunities for the sportsmen of the state. By working with large landowners, both public and private, the Virginia Game Commission and the landowners themselves have been able to make available much land which otherwise would be tied up or "Posted" as far as hunting and fishing is concerned.

The Northern Virginia area has been particularly fortunate in this respect. It includes the George Washington National Forest (about 935,000 acres in Virginia) and the Quantico Marine Base (about 50,000 acres in Fauquier, Stafford and Prince William counties) managed under cooperative agreement with the Game Commission. A considerable amount of private land owned by pulp and paper lumber companies is open to hunting by permit, some of which is not managed under cooperative agreement with the Commission.

Cooperative wildlife management is based on the fact that wildlife belongs not to the individual who owns the land but to the commonwealth, who holds it "in trust" for the people of Virginia. This principle goes back to English law and the Magna Charta of 1215. The land on which wildlife lives is, in most cases, in private ownership or owned by a public agency. Thus, cooperative wildlife management has as its basic concept the principle that wildlife is a product of the land and that control of the harvest and of the environment or habitat are two major implements of wildlife management.

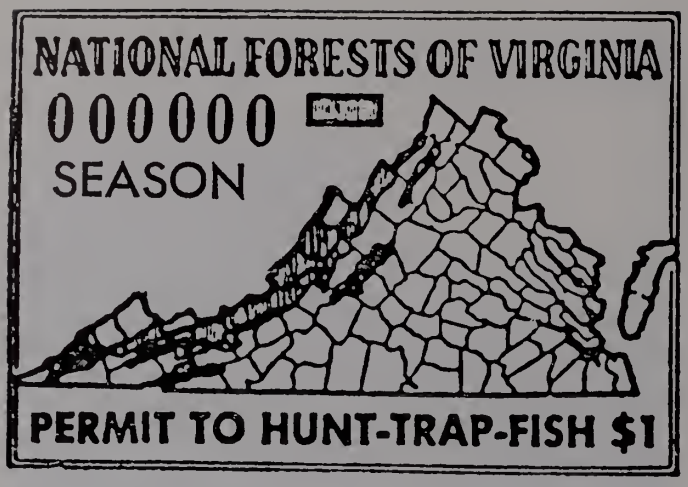
Based on these principles, the U.S. Forest Service and the Game Commission entered into an agreement to facilitate the management of wildlife on Forest Service lands in Virginia. It became effective in July 1938 and provided for the sale of a National Forest Stamp, earmarking all funds derived from its sale for wildlife improvement on Forest Service lands. This money, plus Federal Aid funds, remains the main support of the expanded wildlife program being carried out on the Virginia National Forests today.

The two National Forests in Virginia own approximately 1,583,096 acres in the state. This is by far the largest acreage open to public hunting and fishing under one ownership. The George Washington and the Jefferson operate almost exactly the same as far as the coop wildlife agreement is concerned, with close coordination between the two forests achieved through an annual meeting held to discuss problems of mutual interest and to coordinate activities between the two forests.

In the beginning, key men in the program were game managers (now known as wildlife management area supervisors) for the Commission and the GDA (general district assistant) for the Forest Service. This is still basically true except that now more often than not the Forest Service man most intimately connected with the wildlife program is the TMA (assistant ranger in care of timber management on the district), since timber operations play a growing part in the wildlife program. Earlier, the Forest Service supervised the game manager directly even though the manager was a state or Game Commission employee; the biologist role was that of consultant. Today the Commission is in full charge of its own personnel, with work coordinated through work planning sessions and day-to-day contact between Forest Service and Commission personnel.

Preparation of annual budgets and work plans is a Commission responsibility with input by the Forest Service. The Commission still assumes a leading role in the field of wildlife harvesting through establishment of seasons and bag limits and in enforcement of laws and regulations pertaining to fish and game. The Forest Service, as landowner and manager, is primarily responsible for wildlife production on National Forests.

Most emphasis on a biologist level is centered around timber-wildlife coordination problems, attempting to create and maintain as near optimum habitat condi-



tions as possible for wildlife through timber sales. The district biologist works with ranger district personnel on compartment prescriptions, timber sale layouts, inspections and unit planning. The game manager follows through with such activities as seeding log landings, logging roads, daylighting these roads, etc., with Forest Service participation. Commission equipment is often used, the Forest Service furnishing seed, lime and fertilizer as money becomes available.

Direct wildlife habitat improvements are not as important as in the days before even-aged management became the magic word. Creation and maintenance of wildlife clearings were once main activities. Today clearings are made and seeded but are usually established in connection with timber sales by the enlargement of log landings and other timber operation openings. As they diminish in value with time, new openings are created nearby to take their place. Normally, the openings are a one-shot deal with no maintenance planned. Large capital outlay projects made in the 1950's by the Commission, as well as other clearings, are still maintained where the need exists. Where water is considered a limiting factor, water holes are being established. The newest technique is to blast them instead of pushing them out with a bulldozer because of the economics involved. Daylighting or widening of logging roads to open up the forest canopy, done mostly through timber sales with seeding follow-up by the game manager, is another important activity.

The trout stocking plan is usually prepared jointly by Forest Service and Commission personnel. Approximately 200,000 trout are provided by the Bureau of Sport Fisheries and Wildlife and delivered to the Forest, transferred to Commission trucks and tanks and stocked in the streams and lakes on the forests by game managers, Forest Service personnel, and game wardens. Since 1958 a large number of wild turkeys have been trapped on the Gathright Wildlife Management Area in Bath County (a few from Big Levels on the Pedlar ranger district) and stocked mostly on the Jefferson National Forest. This stocking effort has proven an outstanding success throughout Virginia's southwestern counties.

Game managers spend much of their time just prior to and during the opening days of hunting and fishing seasons in law enforcement and patrol activities, an invaluable source of protection for forest wildlife. The game manager is also an indispensable part of the ranger's fire suppression team on most districts.

While the coop program with the U.S. Forest Service was the first in the state, it is by no means the only one today. Through agreements with other state and federal government agencies and with private corporations which include pulp and lumber companies throughout Virginia, the Commission is involved in wildlife management programs in varying degrees of intensity. Agreements for management of the wildlife resources have been reached with nearly all of the Department of Defense installations in Virginia, with the Virginia Division of Forestry, and with many of the state parks. As a result, large acreages of prime hunting lands are open to the public at little or no cost to the individual. Even where no formal agreement exists, hunting is usually permitted on large acreages of private land under some form of permit system, providing hunting for individuals who otherwise would have to look to public hunting lands for hunting opportunities.

In addition to cooperatively managed lands in Virginia, the Game Commission has acquired approximately 160,000 acres to provide public hunting and fishing areas for the state's sportsmen. A large portion of this land is in the northern and northwestern portion of the state. In most instances, Commission personnel live on the area to provide protection and do wildlife habitat work. Where agricultural land is of any consequence, it is leased to local farmers who farm it so as to give maximum benefit to wildlife, leaving some of their crop in the field in partial payment for the lease. Where forest lands make up the bulk of the ownership, an active timber program is carried out for the purpose of maintaining and improving wildlife conditions. The program is planned and coordinated by the Commission's forester with maximum input by the district biologist in charge of the area.

The cooperative wildlife management idea that began with the U.S. Forest Service in 1938 has come a long way. It spawned a number of other coop programs not only in Virginia but in other states as well. Starting with the Forest Service, it has spread to the Virginia Division of Forestry, the Virginia Division of Parks, the Department of Defense and to the private sector. There must be something to this cooperation business for nearly everybody; at least it seems to be paying off. With anticipated increased pressure on all of our natural resources, we can only hope that the future will be as bright as the past, with all parties involved pulling together to manage the commonwealth's wildlife resources for the maximum good of its citizens.

GO IN THE BACK WAY

By C. L. HATCHER
Martinsville

"I didn't see a single deer sign," Bob said after tying up the canoe and warming by the campfire to knock off the chill of a cold January rain. He brought discouraging news and now it was too late to scout other hunting areas before morning - the last day of the season.

Bob Beck and I had made plans to canoe the beautiful section of the Staunton River between Long Island and Brookneal and hunt either the Campbell or Halifax side of the river where doe and bucks were legal the last hunting day. The plan was simple enough. We canoed to a good island camping site eight miles down the river. While I made camp and started supper, Bob scouted the Campbell side for deer sign. His expedition was not successful, and we faced the prospect of hunting the next day in an area we had seen only from a canoe.

Hunting with a canoe isn't new. Indians throughout North America were hunting masters with the craft. Today it is surprising that relatively few Virginia hunters use the canoe. On many shallow mid-land and mountain rivers the canoe is about the only suitable craft. The canoe has other pluses. It is almost silent when paddled correctly and carries an amazing amount of weight for its size. Most important, the canoe carries hunters into territory difficult to reach by another method. Difficult territory if often the natural habitat for wildlife.

There may be readers who say to themselves: "I don't have a canoe, but I might use my johnboat to run the James or New River this season for deer." A bit of friendly advice: Don't try it. Unless you are an expert handler of small boats, the best way to lose a $200 gun or your life is to attempt to run such streams in a johnboat. Last year two persons were killed trying to do just that on the New River. Most state rivers have sections of white-water rapids, and for the novice a johnboat can be a difficult craft to handle in swift, tricky water. It will broach easily in fast water; yet it is sluggish in response to a paddle stroke needed to change directions. Once you have broached on Fish Trap Falls of the Staunton or Foster's Fall on the New River, you have very quickly "bought the farm."

I was awakened before daylight by Bob poking up the fire. While eating breakfast we mapped our plans. We agreed it would be unproductive to hunt an area without deer sign. Instead we decided to hunt across

the river in Halifax. One legal problem should be considered well in advance. Virginia hunting regulations require permission to hunt be obtained from landowners. Because of absentee ownership and difficulty in determining property boundaries while canoeing a river, it is almost necessary that permission be obtained prior to the trip. The area in which we planned to hunt is owned by a large paper company; getting permission to hunt before the trip was relatively simple. Then too, such property is usually well-marked with metal signs, making it easy to find the hunting area and to stay within the boundaries.

Another good bet for the canoeing hunter is to hunt land owned by the Virginia Commission of Game and Inland Fisheries. For example, the Hardware River which flows into the James River in Fluvanna County passes through good deer hunting territory on the Commission's Hardware River Wildlife Management Area.

Although hunting in unfamiliar country can be discouraging, it can be aided greatly by a good map. The 7.5 minute series of topographical maps published by the U.S. Geological Survey has excellent detail and provides the hunter valuable information including stream locations, man-made objects and the contour of the land. Study of the topo map we carried revealed that in the area we planned to hunt a very steep bluff ran parallel to the river for several miles. We reasoned that the narrow strip of land between the river and bluff formed a natural passageway for wildlife moving up or down the river.

At first light we stowed our lunch in the bow of the canoe and set out. On this trip we were using Bob's 16-foot, handmade cedar strip canoe. A canoe shorter than 16 feet is not a good idea for deer hunting on white-water streams. Small canoes can't handle heavy loads safely. Two hunters, camping gear and one or two deer carcasses would overload a small canoe. Bob's 16-footer was very adequate. However, we are familiar with the Staunton, having canoed it several times.

After tying the canoe to a convenient sycamore root, we started hunting up the river. Our guess proved correct. Game trails were abundant in thick growth along the river. We saw heavy deer and turkey sign, plus indications that furbearers were using the river bank regularly. This section of the Staunton is one of the few rivers in Virginia to support a population of river otter. Occasionally ducks flushed in front of us when we walked near the river.

The majority of deer kills in Virginia probably are made from stands, either in trees or on the ground. However, when hunting unfamiliar country in which the habits of deer are not known and there are few or no other hunters to keep deer moving, hunting from a stand isn't practical. Stalking and tracking is another hunting method; but unless the hunter is very expert and very experienced, all the advantage is with the deer. We used a combination of the two methods. We walked quietly for a couple hundred feet, then stopped for five minutes or so to examine the bramble ahead. Occasionally, Bob used his binoculars to search out a particularly thick stand.

It was during a "stand" period that Bob spotted the doe moving across the skyline on the bluff a hundred feet above us. The doe began to angle down the bluff and away from us. I thought we should shoot, but Bob whispered that we might do better to wait. The doe trotted across a small clearing 50 yards away. We shot at the same instant, and the deer dropped immediately. We were using shotguns. I fired a rifled slug; Bob used 00 buckshot. Because of the quick kill, it was assumed the deer had been hit with the slug. But I missed; Bob made a clean kill. Four shot were in the head and neck, indicating the stopping power of buckshot if placement is correct. As we field dressed the 100-pound doe we heard dogs yelping on its trail. They soon reached us and seemed to be properly tagged; we assumed they weren't strays; probably belonged to other hunters out for the last day of the season.

It was a mile and a half back to the canoe. Dragging a deer out of the woods is fine in open going, but in heavy growth with rocks and fallen logs, the sling carry is more practical. Even with the doe tied on a stout pole between us, it took nearly two hours to reach the canoe.

By the time we reached the camp there was a chill in the air, indicating a cold front was moving in. That suited us perfectly. Colder weather meant it would be safe to hang the deer for a few days to improve the flavor. Supper that night was traditional; fresh deer liver fried with onions.

The dropping water level concerned us. With the added weight of the deer there might be tough going in shallow sections ahead. We decided to break camp as early as possible the next morning to give us plenty of time to meet Bob's son, Danny, with the pickup truck at the Brookneal boat landing maintained by the Commission of Game and Inland Fisheries. We got away early, and as expected, were slowed by shallow water; but little serious trouble was encountered.

A few hundred yards from camp we were gliding almost silently in the early morning fog when we surprised a doe drinking at the water's edge. Taking a shot is tempting under such conditions, but don't do it. Virginia hunting regulations prohibit the shooting of deer from a boat.

Now, canoeing your favorite Virginia stream for deer this season won't assure you venison in the freezer. The season before our successful trip we hunted the James River by canoe and came home empty-handed. However, success on a canoeing-camping-hunting trip can be measured several ways. On our last night on the Staunton Bob stated it pretty well for both of us: "You know, I don't care if I don't get a shot on these trips; I just enjoy being out."

Know Your Commissioners:

Richard E. Watkins

Commissioner Watkins poles a flatbottomed boat through some of the more shallow areas of the waterfowl habitat on Curles Neck Farm.

Text and Photos
By F. N. SATTERLEE
Information Officer

Richard E. (Dick) Watkins grew up near South Hill, Va., the location of the family home and his father's automobile business. As a youth, he became interested in waterfowl, game birds, animals and the outdoors. This interest was heightened when the elder Watkins purchased Curles Neck Farm near Richmond, Va.

Dick accompanied his father on frequent trips to the farm and then, one year, spent his summer vacation at the 5,000 acre dairy farm located in rural Henrico County. This concentrated exposure to farm animals, wildlife and waterfowl on the farm's wetlands had a profound effect on the youngster. This experience intensified his interest in birds, especially waterfowl.

After graduation from high school in South Hill, he attended the University of Richmond, majoring in business. Following that, he spent 1½ years in Fort Lauderdale, Florida where he was engaged in the hotel business, returning in 1961 to Curles Neck Farm to begin raising pheasants on a commercial basis.

While engaged in the pheasant project, he became involved with the operation of the farm, and eventually became responsible for the entire operation. This involves management of the 400-cow dairy herd and the farming operation which produces feed and pasture for the animals. He oversees the operation of more than 1,000 acres of waterfowl habitat on which an attempt is being made to increase production of certain species of waterfowl.

Later Dick became involved with the captive rearing and release of wood ducks and black ducks and establishment of a local breeding flock of about 100 Canada geese. One of the geese, raised and banded at Curles Neck, was recently harvested by a Creel Indian in Quebec, Canada.

Mr. Watkins has been appointed a National Trustee of the Ducks Unlimited organization. In 1967, he was the recipient of the Ducks Unlimited CONSERVATION SERVICE AWARD.

Dick Watkins was appointed Third Congressional District representative to the Virginia Commission of Game and Inland Fisheries in July, 1971 by the then Governor Linwood Holton. To Dick, the most gratifying and enlightening aspect of his responsibilities as a Commissioner is the privilege of working with the professional and dedicated Game Commission staff and the opportunity to serve the sportsmen and women of the Commonwealth.

make your own HUNTING MAP

By BILL WEEKES
Spartanburg, South Carolina

Any serious nimrod should carry with him a picture of his hunting grounds. Among other things, his own personalized map may keep him from becoming lost; would give him a fairly accurate idea how far out of the woods he may have to drag a dead deer or tote a harvested turkey; and would show him, in cases of emergency, the shortest route to the nearest road.

Making his own hunting map is an extremely effective way for a nimrod to learn a woods. The landmarks become burned into his memory.

Map making should be a continual enterprise. Each trip to the hunting territory means more landmarks to pinpoint afield and label on paper. Slowly, in this way, the hunter's map grows, becoming more detailed. Landmarks need not be labeled with mere numbers, but rather with words and phrases representing a shorthand of the hunter's own experience: i.e., "barking squirrel poplar," "double-trunked pine," "black snake ravine," or "leaning pine gorge." Each of these are either landmarks with easily recognizable features, or sites where events transpired which in themselves would make the landmarks memorable.

The most important landmarks, however, are those involving the hunter's game. Deer sightings or places where deer were harvested; roosting sites (trees in which gobblers spend their nights); den trees (trees with leaf nests - places where squirrels, 'possum or other small game make their homes) - each of these locations should be dutifully recorded on a personalized map.

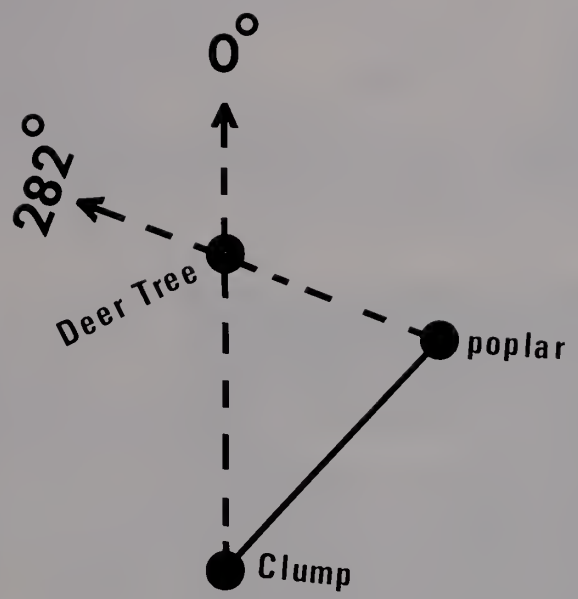
After developing such a map, with the aid of a compass and two good legs, a hunter better knows *where* game is located and he is given a better promise of success. With enough sightings of deer, for instance, a pattern of their home range, or their concentrations, unfolds on paper. A hunter then becomes qualified to know where to place his deer stand.

The first step in making one's own hunting-ground map is recording a trek through the territory. The accompanying map shows the result of just one day in a new woods. I not only stalked, while pacing off distances, but still-hunted at points where I took readings with my compass. I learned the woods *while* hunting. So there was really no time "wasted."

With compass readings and my two feet, I moved through the woods to and from 15 landmarks. Using a notebook, I roughly sketched my trail, taking note of azimuth readings and marking down the numbers of steps it took to walk from landmark to landmark, making sure to walk as straight a line as possible between landmarks.

Peering through the sighting device on my revolving dial compass, my first reading was along a parallel stretch of dirt road. The reading was 97 degrees. Then, fromswhere I stood next to the road, I had to decide in which direction to enter the woods. I spotted a tall clump of trees and to it took my second reading, which was 29 degrees. From where I stood, I paced 101 steps to the clump of trees. From the clump, I took a reading on another landmark, a tall yellow poplar. The azimuth: 43 degrees.

Once the hunter has established a number of fixed points on his map, he is in a position to practice triangu-



lation. By triangulation one determines the location of an unfixed third point on a map from directional readings on it from two fixed points (or landmarks) in the field. An accompanying illustration shows a blow-up of two landmarks - the clump of trees and the tall yellow poplar. Suppose, for example, the hunter spots a deer near a tree. He wants to mark this sighting on his map later. From two nearby fixed landmarks, he takes compass readings to the deer tree. The location of the deer tree, in our example, becomes fixed at that point where the azimuths (282 degrees from the poplar and 0 degrees from the tree clump) intersect.

In making a map, distance is the twin essential to direction. What is the distance from one landmark to the next and how is this distance converted for use on a map? In the field, a shorthand method of determining distance is by pacing off steps. I know how many of my steps equals how many feet, or yards.

For example, in my backyard I have two horsehoe pegs spaced 40 feet (13.3 yards) apart. I require 16 steps to walk from one peg to the next. By extension, were I to pace 32 steps, I would know I have walked nearly 27 yards. Where "S" represents number of steps, I use the following formula in converting steps into yards. To wit:

$$\text{YARDS} = \frac{13.3\,(S)}{16}$$

My 101 steps from the road to the clump of trees was a distance of 84 yards. On a map distances obviously must be reduced to scale. It is a matter of personal choice how many steps afield should equal one inch on paper. I drew my map making one inch equal 32 steps. I could also draw a bar, or line, as a key to the map, stating it equaled 50 yards, 100 yards or whatever I felt convenient.

Where distances are involved there is one important consideration. Unlike a map, terrain is not perfectly flat. There is a rule of thumb for a map maker walking on a 20 percent slope. If he is walking downhill, he should subtract two feet (or about one step) for every 100 feet of decline. If one is walking uphill, he should add two feet for every 100 feet. Where slopes are steeper, greater allowances should be made. However, map makers should select landmarks in such a way that the slope factor is as negligible as possible.

After the hunter has his map established, he finds he has a sense of space about his hunting grounds. He is able to view them with perspective. For those inflation-conscious nimrods who cannot afford a pedometer, a map can satisfy one piece of curiosity, such as: How far did I walk today? The accompanying map gives a visual idea of 2½ hours afield. On that day, I walked 588 steps, or 489 yards, or slightly more than a quarter mile (one mile = 1,760 yards), round trip.

The distance on a direct line from where I started to where I stopped at my deepest penetration, a deep gorge, equaled only 251 yards, or about .14 of a mile. I was never more than 163 yards from the curving dirt road, a distance not even one-tenth of a mile.

These distances may read as so much minutiae, but on a map they tell the hunter how much area he might expect to cover during a certain length of time. If he hunts with a rifle, the hunter may gain from his map insight as to the ranges to and from various points on his hunting grounds.

Edited by ANN PILCHER

Bowman and His Gar

9 year old Jeffrey L. Morefield of Clifton used a bow to stop this 12 lb. 5 oz., 38" gar, taken from the Potomac River May 16. The citation winner was weighed at Bull Run Marina.

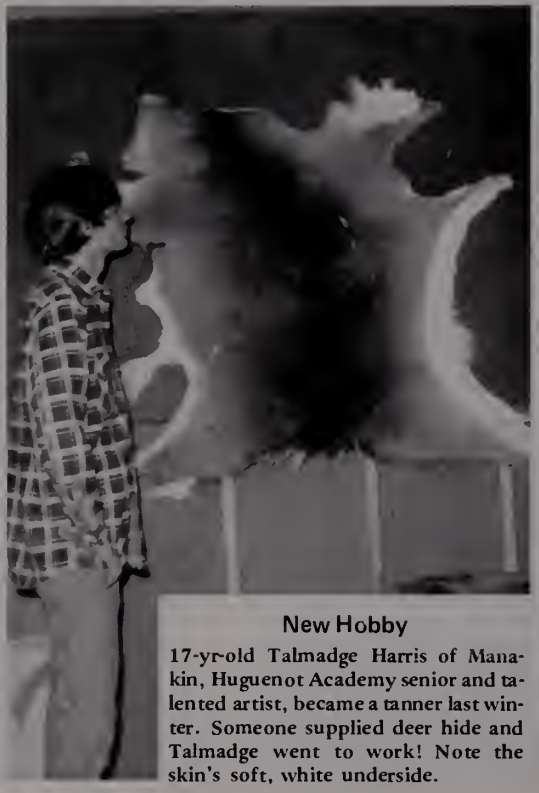
Junior Hunt Club Studies Safe Hunting Techniques

A hunter safety course conducted April 30-May 3 by certified State instructors Sullivan Donadio and Raye Respress for Running Deer Junior Hunt Club members was sponsored by the Colonial Sportsman's League of York County, Va. (an NRA-affiliated club). Four hours of classroom instruction were held at Yorktown Elementary School. In addition, the students spent three hours at the Colonial Sportsman's League range facility being drilled and tested in safe gun handling. They crossed fences and encountered various obstacles while carrying weapons; fired .22 caliber rifles at the 50 yard range; and broke clay birds with shotguns.

Thomas Davis, a member of the York County Rescue Squad and Colonial Sportsman's League, taught a first-aid course, emphasizing respiratory and circulatory system assistance and treatment to persons suffering from shock.

Certificates were presented to 25 recipients at a cookout for students and parents.

Running Deer Jr. Hunt Club members: *1st row*-Donald Reichle, Billy Harris, Daniel Shields, Steve Cooper, Robbie Current; *2nd row*-Paul Self, Gene Whitmore, Kenny Jutras, Nick Florentine, Jr.; *3rd row*-Mike Wade, Frankie Brewer, Kevin Compton, Terry Tyler, Johnny Wellington; *4th row*-instructors Ray Respress and Sullivan Donadio. Completing the class but not pictured include Donnie Crist, John White, Clifton Edwards, Al Sykes, John Lynch, Mark A. Simdnton, Rex A. Current, Art Haake, Mrs. Marianne Harris, Nick Florentine, Sr., and Janet Harris.



New Hobby

17-yr-old Talmadge Harris of Manakin, Huguenot Academy senior and talented artist, became a tanner last winter. Someone supplied deer hide and Talmadge went to work! Note the skin's soft, white underside.

Bird of the Month:

The Snow Bunting

By JOHN W. TAYLOR
Edgewater, Maryland

Indifferent to the most bitter cold, snow buntings hail from the far north, beyond the tree line. There, in the short arctic summer, they build their nests, always on the ground, tucked among the rocks or amid sparse tussocks of grass. A harsh environment, it would seem, in which to raise a family, but the youngsters had best get used to it early. For their entire lives are spent exposed to the most hostile weather, to extreme cold and wind.

Even on the winter range, which extends just south of Virginia (to the Outer Banks) they forsake even meager shelter, preferring the open beaches and barren fields. There they glean the drifts of seaweed and dune grass for seeds and tidal debris.

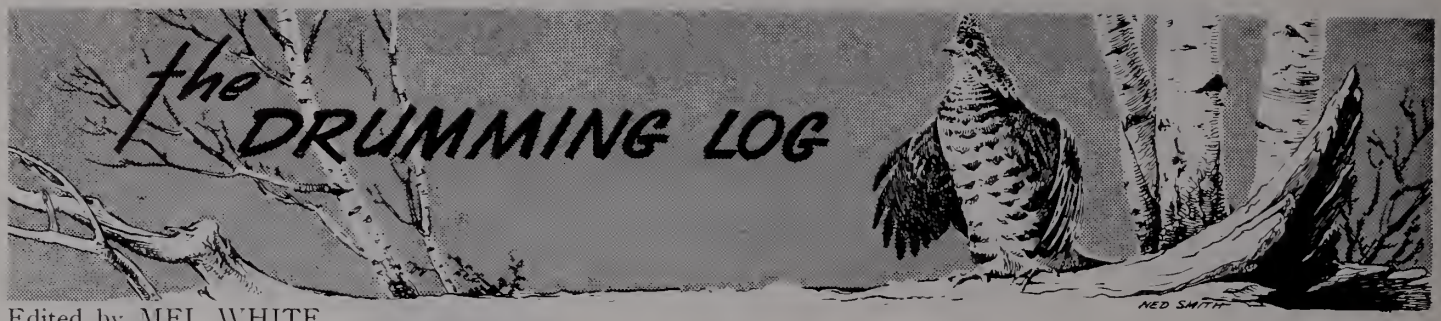
Such harsh conditions seem quite agreeable. Winter gales do not at all chill their spirits nor quiet their twittering chatter. They seem actually to revel in the storm.

When a flock of buntings take wing, their white underparts are prominent, and should dispel any doubts as to their identity. When they alight, one is surprised to see how much they vary in plumage - differences of age, sex and moult. During winter, both males and females are tawny crowned birds, with black and buffy upperparts and black and white tails. The chief difference is in their wing patterns. Mature males have pure white secondaries and coverts, feathers that are brown in females and young birds.

Toward spring, moult, abrasion and bleaching combine to produce striking changes in the snow bunting. As is the case with some other finches, it is only the head and neck feathers which are renewed at this season. The effects of such a partial moult transform the male into vividly contrasting black and white. All of his new feathers are pure white, and the brown edges have worn from his dark feathers. His mate is then attired in more sober hues: grayish, mottled with buff and white.

The snow bunting breeds in the arctic and the subarctic regions of Europe, Asia and America and on many of the islands in the Polar seas. They show considerable variation and several races have been described.

Its winter distribution is largely determined by weather conditions, so anywhere south of New England their appearance is quite unpredictable. In some years they come south in numbers; in others, they never show up at all. Most Virginia birds are found along the coastal beaches and adjacent agricultural land, though there are many records of its occurrence inland.



Edited by MEL WHITE

At presentation of certificate of appreciation to Virginia Commission of Game and Inland Fisheries. Left to right, James N. Kerrick, Chester F. Phelps, J. E. Burnham, Harry L. Gillam and Charles F. Bernhardt.

COMMISSION RECEIVES COAST GUARD AWARD

The Fifth District U.S. Coast Guard Auxiliary recently presented the Coast Guard Auxiliary certificate of appreciation to the Virginia Commission of Game and Inland Fisheries.

In attendance were J. N. Kerrick, Safety Officer; Chester F. Phelps, Executive Director; Joseph Burnham, VCO-5; Harry L. Gillam, Chief, Education Division; and Charley Bernhardt, DCP-III.

The award was made to the Commission for their outstanding work in support of the Coast Guard Auxiliary in Virginia. Their program of assistance with paid ads for public education courses has resulted in a two-fold increase in some areas. They have been adding the names of our public education officers to the information sent each new boat owner. New and old boat owners are referred to the Auxiliary for education and courtesy motorboat examinations. This was started in Division III, but through the work of RCO Tommy Huband and DCP Charley Bernhardt it has been extended throughout the entire state.

WHITEWATER RAFTING
By William McGinnis

WHITEWATER RAFTING, by William McGinnis (Quadrangle/The New York Times Book Co., 10 E. 53rd St., NY 10022; 1975; $12.50).

WHITEWATER RAFTING is a comprehensive guide to the sport. It explains in detail all the important rafting skills: how to choose and care for a good raft, and how to build rowing frames and watertight boxes; how to read white water and how to use oar, paddle and sweep-oar techniques;

Seventy-six detailed drawings and many photographs illustrate the techniques and the river characteristics, provide plans for everything from rowing frames to sauna tents,

CARDINAL ART AIDS HOSPITAL

The St. Louis Football Cardinals, The National Wildlife Art Exchange and the St. Louis Children's Hospital respectfully offer you the opportunity to obtain a full color art collector print (prepaid - $23.50) of "Cardinals in Winter" by one of America's foremost wildlife artists - Ron Jenkins of Arlee, Montana. The original painting is from a collection of the St. Louis Football Cardinals.

The National Wildlife Art Exchange of Vero Beach, Florida, in conjunction with the St. Louis Football Cardinals, have designated that $9.00 from the sale of each collector print shall be donated to the St. Louis Children's Hospital (not for profit) to enable them to maintain and provide additional medical services to all deserving children, regardless of their color or creed.

Mail your check ($23.50) to National Wildlife Art Exchange/St. Louis Children's Hospital, Drawer 3385, Vero Beach, Florida 32960.

INDEX TO VIRGINIA WILDLIFE

VOLUME XXXVI – JANUARY 1975 THROUGH DECEMBER 1975

ADMINISTRATION

Know Your Commissioners—*F.N. Satterlee*
- Eddie Edgar . . . Jan., p. 26
- Ralph Weaver . . . Apr., p. 26
- Dolph Hays . . . Sept., p. 24
- Richard Watkins . . . Dec., p. 21

Exclusive Offer to Virginia Wildlife Subscribers . . . July, p. 5

AMPHIBIANS

Frogs and Toads of Virginia—*J. C. Mitchell* . . . Apr., p. 13

BIRDS

Avian Predation of Ruffed Grouse—*Jim Wigington* . . . Feb., p. 9
Crop Milk Production in Mourning Doves—*P. F. Scanlon* . . . June, p. 18
Timberdoodle—*Bob Gooch* . . . Oct., p. 16
Hands for Snowhound Birds—*Joe Hanenkrat* . . . Jan., p. 12
The Racing Pigeon—*Bill Weekes* . . . Aug., p. 18
Winged Pollution: The Monk Parakeet—*R. N. Conner, Jack Smith, R. H. Giles, Jr.* . . . Sept., p. 20
The Day Hunters—*F. T. Hanenkrat* . . . May, p. 9
Integrated Nest Fails—*Tate Young, Jr.* . . . June, p. 19
Bluehird on My Shoulder—*Jeanne Price* . . . July, p. 18
Home-Grown Geese—*Caroline Bokinsky* . . . May, p. 4
Bird of the Month—*J. W. Taylor*
- Horned Lark . . . May, p. 27
- The American Redstart . . . June, p. 27
- Dowitcher . . . July, p. 21
- The Short-tailed Marsh Wren . . . Aug., p. 27
- The Golden Eagle . . . Sept., p. 27
- The Savannah Sparrow . . . Oct., p. 27
- The American Wigeon . . . Nov., p. 27
- The Snow Bunting . . . Dec., p. 25

BOATING

James River Journey—*Steve Rhodes* . . . Mar., p. 4
Coastal Canoeists—*Bunny Henshaw* . . . Apr., p. 7
Boating Safety: Take One . . . Apr., p. 20
Mattaponi Canoe Trip—*C. L. Hatcher* . . . May, p. 14

CONSERVATION EDUCATION

When Teachers Go to School to Learn About Virginia's Resources—*Mel White* . . . Mar., p. 18
Get Acquainted With the World—*Carsten Ahrens* . . . June, p. 21
Teach Them Outdoor Appreciation—*Carl Knuth* . . . Aug., p. 10

CONSERVATION—GENERAL

The Fight to Save Our Wildlife—*R. E. Leresche* . . . Mar., p. 14
Recipe: Youth Involvement—*Jan Curtis* . . . July, p. 6
Channelization: It's Time to Talk—*Deane Dozier* . . . July, p. 12
Symposium on Channelization: A Report—*Deane Dozier* . . . Nov., p. 6

EDITORIAL

A Nickel's Worth of Serenity—*H. L. Gillam* . . . Jan., p. 3
What Are Anti-Hunters For?—*H. L. Gillam* . . . Feb., p. 3
Wildlife Week—*H. L. Gillam* . . . Mar., p. 3
A Matter of Viewpoint—*H. L. Gillam* . . . Apr., p. 3
Gun Control—*H. L. Gillam* . . . May, p. 3
Be Gentle With the World—*Sandra S. Meadows* . . . June, p. 3
Damage Stamp Denounced—*H. L. Gillam* . . . July, p. 3
Turning the Corner—*H. L. Gillam* . . . Aug., p. 3
An Uphill Struggle—*H. L. Gillam* . . . Sept., p. 3
Electronic Nature—*Chester Goolrick* . . . Oct., p. 3
Without Hunters, Who'd Pick Up the Tab?—*John Madson* . . . Nov., p. 3
The Outdoor Mystique—*H. L. Gillam* . . . Dec., p. 3

FISH MANAGEMENT

1975 Trout Stocking Plan . . . Mar., p. 9
Know Your Technicians—*F. N. Satterlee*
- Carl P. Ramsey . . . Aug., p. 24

Classifying Virginia's Trout Streams—*R. E. Wollitz* . . . Sept., p. 6

FISHING

Winter Trout—*Bob Gooch* . . . Jan., p. 4
Walleye—*Bob Gooch* . . . Jan., p. 8
Anna & Jack: Esox fable of wedded bliss—*Bill Weekes* . . . Feb., p. 10
Tying the Stevens Jig—*P. R. Kugler* . . . Feb., p. 14
Opening Day on South River—*Bob Gooch* . . . Mar., p. 7
Smith Mountain Smallmouths—*Bill Cochran* . . . Mar., p. 16
Carp Country—*R. G. Bowers* . . . Apr., p. 4
Tailrace Stripers—*Bill Cochran* . . . Apr., p. 12
After Opening Day—*Bill Anderson* . . . May, p. 6
Catch a Record Fish? . . . May, p. 19
Give Them an Inch—*Bill Allen* . . . June, p. 6
A Redbreast for the James—*Joe Wiseman* . . . June, p. 12
Make Your Own Sinkers—*D. L. Peterson* . . . June, p. 16
I Love the Fins—*Samuel Parsons* . . . July, p. 16
Muskies in the Shadow of the White House—*Mike Pane* . . . July, p. 22
Scientific Brim Fishing—*W. W. Sadler* . . . Aug., p. 4
Best Brown Trout Stream in the Country—*Bill Cochran* . . . Aug., p. 16
How to Succeed with Schooling Bass—*Pete Elkins* . . . Sept., p. 13
Fishing a Forbidden River—*Garwey Winegar* . . . Oct., p. 4
Smith Mountain Striper Boom—*Bill Cochran* . . . Oct., p. 12
Lunker Fisherman—*Bob Gooch* . . . Oct., p. 22
Fishin' the Snake Castle—*Bunny Henshaw* . . . Nov., p. 9
Bridges: Good Bet for Fall Bass—*Gerald Almy* . . . Nov., p. 12
How to Catch a Bass—*Steven Ruckel* . . . Dec., p. 8

FOOD PREPARATION

Let's Cook Breast of Venison—*Majorie L. Masselin* . . . Jan., p. 6
The Year of the Deer—*Sandra S. Meadows* . . . Feb., p. 17
Let's Cook Blowtoads—*Majorie L. Masslin* . . . June, p. 22

FORESTS & FORESTRY

Observations From the Tower—*Nancy Roberts* . . . June, p. 9
Forest Clearings: How Size Affects Wildlife Use—*L. A. Rueger, R. H. Giles, Jr.,* . . . Sept., p. 15

GUNS & OTHER WEAPONS

Recycle Your Ammunition—*Bill Anderson* . . . Sept., p. 22

HUNTING

Hunting the Woodcock—*N. E. German* . . . Jan., p. 7
Turn Your Wife into Your Hunting Buddy—*Art & Joan Cone* Jan., p. 16
Big Game Trophies—*Bill Weekes* . . . Jan., p. 22
A Perfect Twenty Minutes of Quail Hunting—*H. L. Krout* Jan., p. 24
Wanted: A Place to Hunt—*Joe Wiseman* . . . Feb., p. 4
The 27th Annual Big Game Trophy Show . . . Feb., p. 21
Spring Turkey Hunt—*Mark Mullen* . . . Apr., p. 18
Virginia Spring Turkey Harvest . . . Apr., p. 18
Dismal Swamp Deer Hunt: A Natural Success—*Tom Brightman* . . . June, p. 14
How to Hunt Old Browns—*W. W. Sadler* . . . July, p. 25
Doves in Hand—*Bill Weekes* . . . Sept., p. 4
You Won't Get a BANG Out of This—*Joe Wiseman* . . . Oct., p. 8
Bow Hunt "Where"?—*W. R. McCabe III* . . . Oct., p. 10
Big Game Harvest: 1972-73 thru 1974-75 . . . Oct., p. 20
A Hunter is Made—*Ed Pearce* . . . Oct., p. 21
Try a Combination Hunting & Fishing Trip—*Gerald Almy* . . . Nov., p. 4
Dumb Mistakes I Have Made—*Bill Treadwell* . . . Nov., p. 7
A Turkey for Dad—*Richard Pauley* . . . Dec., p. 4
Duck Hunting Glossary—*David P. Chance* . . . Dec., p. 16
Another Chance—*Greg Almy* . . . Dec., p. 9
Go in the Back Way—*C. L. Hatcher* . . . Dec., p. 19
Make Your Own Hunting Map—*Bill Weekes* . . . Dec., p. 22

INDIVIDUAL TRIBUTES & BIOGRAPHIES

Wayman Callahan, Artist—*W. W. Floyd* . . . Jan., p. 25
The Randy Carter Award for River Conservation—*P. W. Rowe* . . . Mar., p. 12
Paint It "Authentic"—*H. L. Lawrence* . . . July, p. 4

INSECTS

The Monarch—*Maxine Davis* . . . Apr., p. 9
Six-Legged Wolves—*H. A. Jacobson* . . . May, p. 22

LAND MANAGEMENT

My Mountain—*Bill Anderson* . . . Nov., p. 8

LAW & LAW ENFORCEMENT

Know Your Wardens—*F. N. Satterlee*
- Dwight G. Camphell and Gordon Wilkes . . . Feb., p. 24
- Thomas A. Daniel . . . May, p. 24
- Sidney J. Akers . . . July, p. 16
- Garland Clay Fentress . . . Oct., p. 24

Game Warden: Man on Call—*Linwood Norman* . . . July, p. 14

LOCALES

Apple Manor/G. Richard Thompson Wildlife Management Area—*J. E. Thornton* . . . July, p. 8
Chesapeake's Scenic Waterways—*Joe Wiseman* . . . July, p. 10
Rappahannock Rhapsody—*Pete Elkins* . . . Sept., p. 17
Focus on Maymont—*Charles Nimmo* . . . Nov., p. 14

MAMMALS

Bobcat—*Ed Myers* . . . Aug., p. 6
Whitetail—*Steve Price* . . . May, p. 17
Belle, You Good Dog, You!—*Pete Elkins* . . . Feb., p. 22
Eight Apples Equals Four Raccoons—*Katherine W. Moseley* Oct., p. 6
The Case of the Acrobatic Panhandler—*Deane Dozier, F. N. Satterlee* . . . Feb., p. 18

PHOTOGRAPHY

Home-Grown Hams—*Dick Roe* . . . Feb., p. 12

PICTORIAL SKETCH PLATE

Winter Adaptations—*Carl Knuth* . . . Jan., p. 28
Always Remember That Big One with a Virginia Wildlife Trophy Fish Citation . . . Feb., p. 28
We Care About Wildlife Habitat: National Wildlife Week . . . Mar., p. 28
A New Look at Boating Safety . . . Apr., p. 28
Spawning Season—*Carl Knuth* . . . May, p. 28
"National Safe Boating Week June 29 to July 5"—*Carl Knuth* . . . June, p. 28
Bird Nests—*Ned Smith* . . . July, p. 28
Midgets of the Bird World—*Carl Knuth* . . . Aug., p. 28
Out an Indoorsman in your shoes: National Hunting and Fishing Day . . . Sept., p. 28
The Marlin Safety Pledge . . . Oct., p. 28
Sea Ducks—*Carl Knuth* . . . Nov., p. 28
Christmas Message—*Carl Knuth* . . . Dec., p. 28

PICTORIAL SPREAD

Virginia's Frogs and Toads—*Carl Knuth* . . . Apr., p. 14

PLANTS

The World of Lichens—*Judy M. Price* . . . Jan., p. 14
Winter Greenery—*Judy M. Price* . . . Jan., p. 18
Prelude to Spring—*Judy M. Price* . . . Mar., p. 6
Natural Banquet, Natural Sanctuary—*Doris S. Peet* . . . Mar., p. 10
Native Orchids—*Richard Pauley* . . . Apr., p. 10
Life in Laurel Fork—*Paul H. Bratton, Jr., Judy M. Price* . . . Apr., p. 22
The Elusive Morel—*Paul Bratton, Jr.* . . . May, p. 8
Every Availahle Space—*Jim & Gail Sullivan* . . . May, p. 12
Wintergreen—*Susannah E. Feldman* . . . Aug., p. 20
When the Grapes Get Ripe—*Sandra S. Meadows* . . . Sept., p. 8
Autumn—*Judy Price* . . . Oct., p. 14
In Nature's Garden—*Elizabeth Murray*
- Dutchman's Breeches . . . Mar., p. 20
- May-apple . . . Apr., p. 16
- Blue-Eyed Grass: Yellow Star-Grass . . . May, p. 11
- Gay Wings . . . June, p. 10
- Wild Onion . . . July, p. 9
- The Closed, Blind or Bottle Gentian . . . Nov., p. 25

PUBLIC RELATIONS & SPORTSMANSHIP

Is This the Last Season?—*Bill Treadwell* . . . Sept., p. 16

RECREATION

Orienteering—*S. F. Prescott, Jr.* . . . Apr., p. 25
Maps: Key to Your Private Utopia—*H. W. Webb* . . . Sept., p. 10
Invisible Trophies—*Bill Anderson* . . . Nov., p. 16
The Pond—*Marvin Garrette* . . . Nov., p. 18
Thunder on the Rappahannock—*R.E.B. Stewart* . . . Dec., p. 12

REPTILES

Endangered Species Report—*J. W. Taylor*
- Scarlet King Snake . . . Jan., p. 10
- The Wood Turtle . . . Feh., p. 27
- The Northern Pine Snake . . . Mar., p. 27
- Canehrake Rattlesnake . . . Apr., p. 21

Southern iving With Rattlesnakes—*F.D.P. Bruner* . . . May, p. 20

RESEARCH

The Dismal Autumn Olive Study—*W. A. Guthrie* . . . Mar., p. 22
Where Have All the Rabbits Gone?—*H. A. Jackson* . . . Aug., p. 9
A Deer in Hand—*J. A. Wesson, III* . . . Aug., p. 15

WATER RESOURCES

Channelization: Shortcut to Nowhere—*R. V. Corning* . . . Feb., p. 6
Save Our Streams—Adopt One! . . . Apr., p. 19
Mountain Waterholes—*Dennis Martin* . . . Aug., p. 21
Scenic River on the Shelf: The Staunton—*Joe Wiseman* . . . Dec., p. 6
Pumped Storage: Potential or Problem—*David H. Bennett* Dec., p. 10

WILDERNESS

Wilderness—*Paul Bratton, Jr.* . . . June, p. 19

WILDLIFE—GENERAL

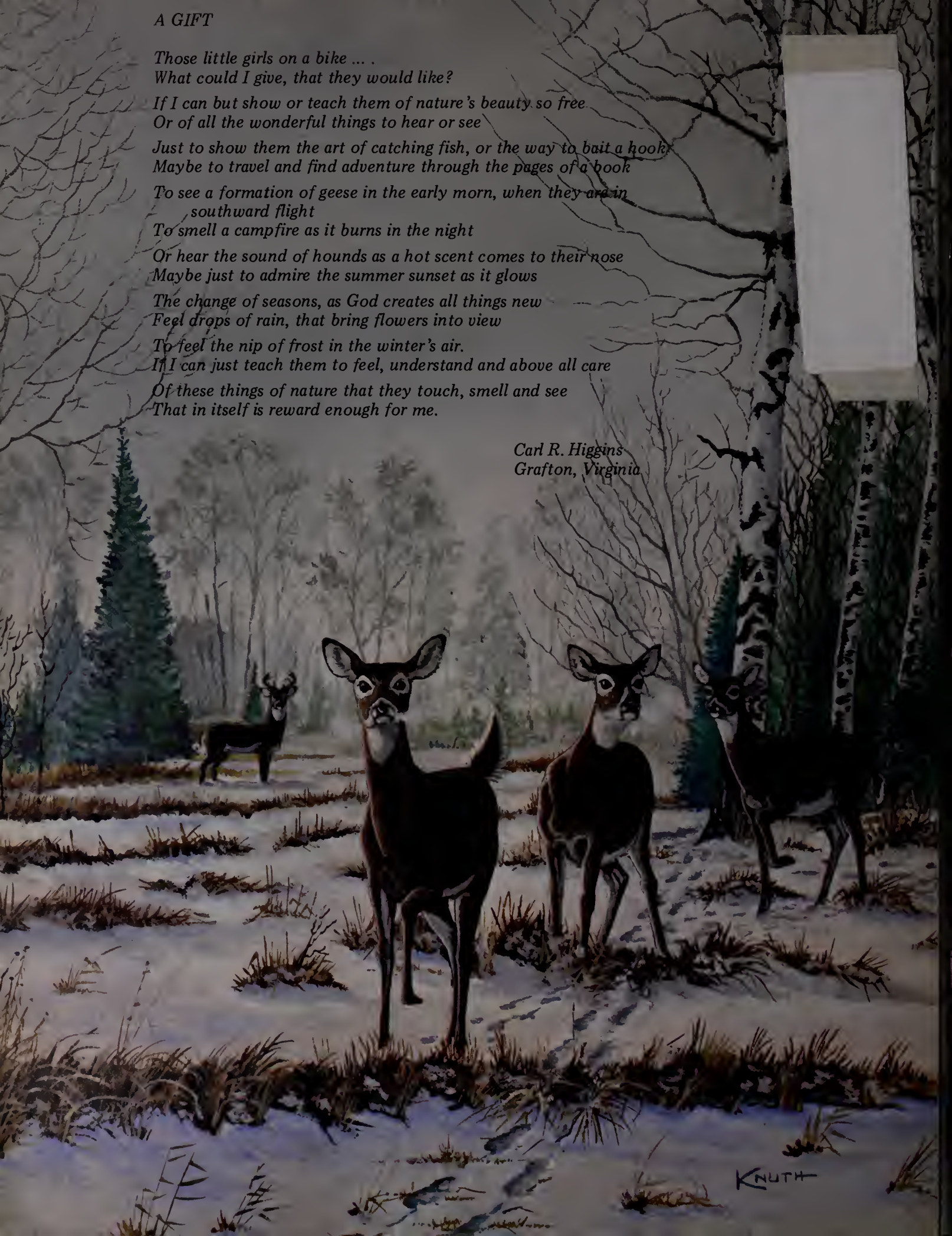
Morning Sounds at Jamestown—*Doris S. Peet* . . . Sept., p. 12
Cooperation in Nature—*Vincent J. Lucid* . . . Dec., p. 14

WILDLIFE MANAGEMENT

To Save the Osprey—*Sharon Kurtz* . . . Jan., p. 20
Giving Nature a Push: The Role of Live-trapping in Wildlife Management Programs—*C. H. Shaffer* . . . Feh., p. 19
Too Many Squirrels—*Alan Bristor, Jerry Moore* . . . May, p. 16
Placing American Wildlife Management in Perspective . . . June, p. 4
Notes from a Seagull's Diary—*William Whalen* . . . Aug., p. 8
Collecting and Interpreting Harvest Facts—*J. L. Coggin* . . . Oct., p. 18
Some Facts Ahout Shenandoah County Deer—*Max Carpenter* Nov., p. 20
Know Your Wildlife Technicians—*F. N. Satterlee*
- William E. Lankford . . . Mar., p. 24

Know Your Biologists—*F. N. Satterlee*
- Jack V. Gwynn . . . June, p. 24

Cooperative Wildlife Management in Northern Virginia—*J. E. Thornton* . . . Dec., p. 17



A GIFT

Those little girls on a bike ... .
What could I give, that they would like?

If I can but show or teach them of nature's beauty so free
Or of all the wonderful things to hear or see

Just to show them the art of catching fish, or the way to bait a hook
Maybe to travel and find adventure through the pages of a book

To see a formation of geese in the early morn, when they are in
southward flight
To smell a campfire as it burns in the night

Or hear the sound of hounds as a hot scent comes to their nose
Maybe just to admire the summer sunset as it glows

The change of seasons, as God creates all things new
Feel drops of rain, that bring flowers into view

To feel the nip of frost in the winter's air.
If I can just teach them to feel, understand and above all care

Of these things of nature that they touch, smell and see
That in itself is reward enough for me.

Carl R. Higgins
Grafton, Virginia